DOCUMENT RESUME

ED 101 169

95

CE 002 937

TITLE

Application of the Individually Prescribed Instructional System to Adult Basic Educational Programs in Nevada: June 1, 1969 - June 30, 1970.

Final Project Report.

INSTITUTION SPONS AGENCY PUB DATE

Mevada State Dept. of Education, Carson City. Office of Education (DHEW), Washington, D.C.

GRANT NOTE

OEG-0-9-382062-4688 (324) 71p.; For a further report, see CE-002 936

EDRS PRICE **DESCRIPTORS** MF-S0.76 HC-S3.32 PLUS POSTAGE *Adult Basic Education: Adult Education Programs; Adult Reading Programs; *Individualized Instruction; Instructional Haterials; *Haterial Development; Mathematics Instruction; *Mathematics Materials; Reading Instruction; *Reading Materials; Skill

Development

IDENTIFIERS

Individually Prescribed Instruction; IPI

ABSTRACT

The intent of the Nevada project was to assess, redevelop, and rewrite basic elementary reading and mathematics curriculum materials. The reading and mathematics curriculum project was to be prepared for use with adults in basic education programs functioning under the Individually Prescribed Instructional (IPI) system. Over 8,000 skill page products were developed and organized into sets or units that focus on a stated skill objective. The skill page set is organized to provide resources, develop understanding, and provide practice or application. A typical set includes review pages, student activity and practice pages, teacher pages, a summary practice page, skill tests, and supplementary resources. Active learner participation and the implementation of individualized instruction were viewed as favorable outcomes of the revision, but recommendations were made for further changes prior to field testing the materials. Skill page samples typical of the mathematics and reading materials developed in the project are displayed in the appendix. (HW)

Jones 9.6002

(FINAL PROJECT REPORT)

DEST COPY AVAILABLE

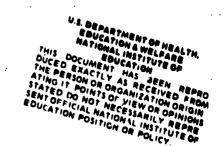
APPLICATION OF THE INDIVIDUALLY PRESCRIBED INSTRUCTIONAL SYSTEM TO ADULT BASIC EDUCATIONAL PROGRAMS IN NEVADA ENEVADA STATE DEPARTMENT OF EDUCATION PROGRAMS IN NEVADA

Burnell Larson Superintendent of Public Instruction



Director, Vocational-Technical & Adult **Education Branch**

Lyle L. Leissi Supervisor



JUNE 1, 1969 - JUNE 30, 1970

The project reported herein was supported by a grant from the U. S. Department of Health, Education fare. Office of Education.

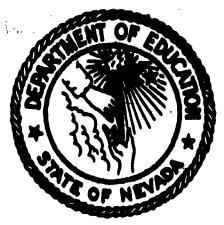
of Education Grant Number OEG-0-9-382062-4688(324), Adult Education Act of 1966, Section

(FINAL PROJECT REPORT)

APPLICATION OF THE INDIVIDUALLY PRESCRIBED INSTRUCTIONAL SYSTEM TO ADULT BASIC EDUCATIONAL PROGRAMS IN NEVADA

NEVADA STATE DEPARTMENT OF EDUCATION

Burnell Larson Superintendent of Public Instruction



John W. Bunten
Director, Vocational-Technical & Adult
Education Branch

Lyle L. Leland Supervisor

JUNE 1, 1969 - JUNE 30, 1970

The project reported herein was supported by a grant from the U. S. Department of Health, Education & Welfare, Office of Education.

Office of Education Grant Number OEG-0-9-382062-4688(324), Adult Education Act of 1966, Section 309.



TABLE OF CONTENTS

List of Figures	• • • • • •		iii
Final Report Abstract	• • • • • • •	• • • • •	iv
Final Report			1
Project Purpose	• • • • • •		1
General Objectives		• • • •	1
Specific Objectives	• • • • • •	876 sad	2
Procedures	• • • • • •		3
Program Design			(3
Operational Characteristics o	f the Project	• • • •	
Results	• • • • • •		13
Operational Record		• • • • •	13
Description of the Curriculum	Product		15
Conclusions and Recommendatio	<u>ns</u>	• • • • •	•
Appendix A	•		
Examples of Mathematics Skill	Sheets		
Appendix B		• • • •	
Examples of Reading Skill She	ets	·	

List of Figures

Figure 1		•							
ADULT LIFE ROLES, NEEDS, AND GOALS	• •	• •	• •	•	•	•	•	.•	4
Figure 2		•						•	
STUDENT ACTIVITY FLOW MODEL FOR THE IF	PI S	YSTI	em .	•	•	•	•	•	6
Figure 3									
ADMINISTRATIVE ORGANIZATION	• •	• •	• •	•	•	•	•	•	8
Figure 4									٠
CURRICULUM MATERIALS DEVELOPMENT CYCLE	E	• •	• •	•	•	•	•	•	9
Figure 5					-				
PROJECT STAFF POSITIONS	• •	• •	• (•	•	•	•	•	11
Figure 6							-		
TYPICAL SEQUENCE MODEL FOR A SET OF SI	KILL	PA	SES						16

FINAL REPORT ABSTRACT

PURPOSE

The intent of the project titled: "Application of the Individually Prescribed Instructional System to Adult Basic Educational Programs in Nevada" was to assess, redevelop, and rewrite basic elementary reading and mathematics curriculum materials. This reading and mathematics curriculum product was to be prepared for use with adults in basic education programs functioning under the Individually Prescribed Instructional (IPI) system.

Another aim was to plan for statewide and a nationally representative assessment, redevelopment, and field testing of the curriculum product developed as a result of this project. Incorporated with these plans is the demonstration of the IPI Program to illustrate its effectiveness with adult students. The plan also was to include program and product dissemination with the intent of providing nationwide svailability.

PROCEDURE

Project organization involved federal, state, and county administrative units. These three levels of administration include the U.S. Division of Adult Education Programs, Nevada Vocational-Technical and Education Department respectively.



iv

A consultant service contract for planning nationwide field testing, of the product, IPI resource, and IPI technical advice was secured with Research for Better Schools, Incorporated, a combined private non-profit corporation and regional educational laboratory located in Philadelphia, Pennsylvania.

The project staff was composed of a supervisor provided by the state and a project director, project manager, curriculum writers (full and part-time), graphic arts specialists (part-time), and a clerical staff (full and part-time) provided by the county.

Project tasks were related to producing a curriculum material product for basic reading and mathematics. A curriculum materials development cycle was used that included: materials and information review and selection; writing and illustrating with consultation; proofing; duplicating, collation, and storage; distribution and limited field testing; and reporting and evaluation.

Materials design was intended to humanize and individualize both content and application. Development procedure was to consider the adult needs and goals that rise from his life roles. This required that the curriculum product be adaptive to the wide range of needs and experiences of adult students. The product also had to function in the IPI instructional management system.

RESULTS AND CONCLUSION

Application of the procedure resulted in preparation of over eight thousand skill page products that develop over seven hundred instructional objectives specifically stated in performance terms.

The skill page characteristics include: vocabulary and illustrations with adult appeal; for mathematics an identification of performance and concept oriented skills; specific hardware requirements be kept to a minimum for instructional objective accomplishment; and keeping the learner actively participating by responding, being in encounters with resources that are preparing him for performance mastery of the instructional objective, or demonstrating his instructional objective mastery.

The product is ready for representative field test to empirically evaluate the rationale for which it was developed; provide direction for refinements of such things as the product context, format, and sequence; and establish priorities for the recommendations made by the project staff for curriculum development.

FINAL REPORT

PROJEC, T PURPOSE

GENERAL OBJECTIVES:

The "Application of the Individually Prescribed Instructional System to Adult Basic Educational Programs in Nevada" project was conceived with the following four general objectives in mind.

1. <u>Develop an individually prescribed instructional (IPI) system</u>
of programs on an adult level.

Adult basic education programs are primarily involved with improvement of communications skills, computational skills and consumer practices. It is desired that programs provide learning opportunities that enable adults to become more effective members of a family unit and the community. Adult education aspire that programs develop student confidence in his ability to learn and be desirous of remaining involved in a process of education. It is intended that adult programs assist the student become a better employee and to prepare him to be a better user of his leisure time. Securing maximum development in minimum time is a required characteristic of an adult program. A requirement for flexible classroom time and space will allow a student to enter the program at any time and function within a realistically variable attendance schedule. An individually prescribed instructional system provides for these adult program criteria.



1

2. Field testing the IPI materials for adults.

It is important that program materials prepared for the adult student undergo test to determine revisions necessary to make it compatible with the needs of the student. Effective program materials are an outcome of field test procedures.

3. Demonstration of the IPI adult programs.

Materials for adult programs are demonstrated to illustrate their effectiveness with adult students. Educators observation of program application will reult in moving decisions regarding applicability for their particular educational program needs and thereby establish requirements for program dissemination.

4. Dissemination of IPI adult programs.

Affecting change through education is the desired terminal activity. To obtain this preferred outcome will necessitate making the programs available to adults. Nationwide program availability is an important objective since it will provide exposure for the greatest number of adults.

SPECIFIC OBJECTIVES.

1. Assessment of current materials and programs.

Knowledge about the condition of what exists provides a valuable resource for development and redevelopment of program materials and their application. Of particular interest are the contemporary adult programs and program materials. To build upon what exists rather than begin from the beginning is desirable.

2. Redevelopment and rewriting of the IPI elementary reading and mathematics program materials for adults.

Basic reading and mathematic materials had been organized for the IPI system for use with elementary age students. The task of redeveloping and rewriting this elementary material to make it more adaptable, relevant, and appealing to the adult was the major effort of this project.

3. Planning for a representative state and national field test.

The variety of programs that exist in adult education makes it desireable that the program material be able to function in various settings and be able to meet the requirements of different adult education centers. Preparation for refinement of the curriculum product, developed by the project, is an important next step. Feedback from a nationwide representation of adult education centers will provide the empirical data for refinement of program materials and its application.

PROCEDURES

PROGRAM DESIGN:

In a design for adult educational programs it becomes important to consider the goals that emanate from the needs of the adult. The needs are derived from the adult's life roles. Figure 1 shows the foundation level role that sustains the need that in turn establishes the goal.

ADULT LIFE ROLES, NEEDS, AND GOALS

Role: Need: Goal:

Person To know Self realization

(to identify)

Member of a family To relate Human relationship

(to be heard)

A Worker To work Economic efficiency

(to be productive)

A citizen To contribute Civic responsibility

(to influence mans'
destiny)

Figure 1

The program developers aim was to humanize and individualize both the program content and application. This requires a developmental procedure that included a consideration of the needs for each adult learner and allow for the establishment of his particular educational goals.

Each adult education center could use an instructional and management system that would accept and diagnose the specific information derived from the incoming student.

Adult center educational programs require a great deal of flexibility to adapt to the wide range of experiences and learning characteristics found among the adult students. The Individually Prescribed Instruction (IPI) management and instructional system does provide for this sought for flexibility.



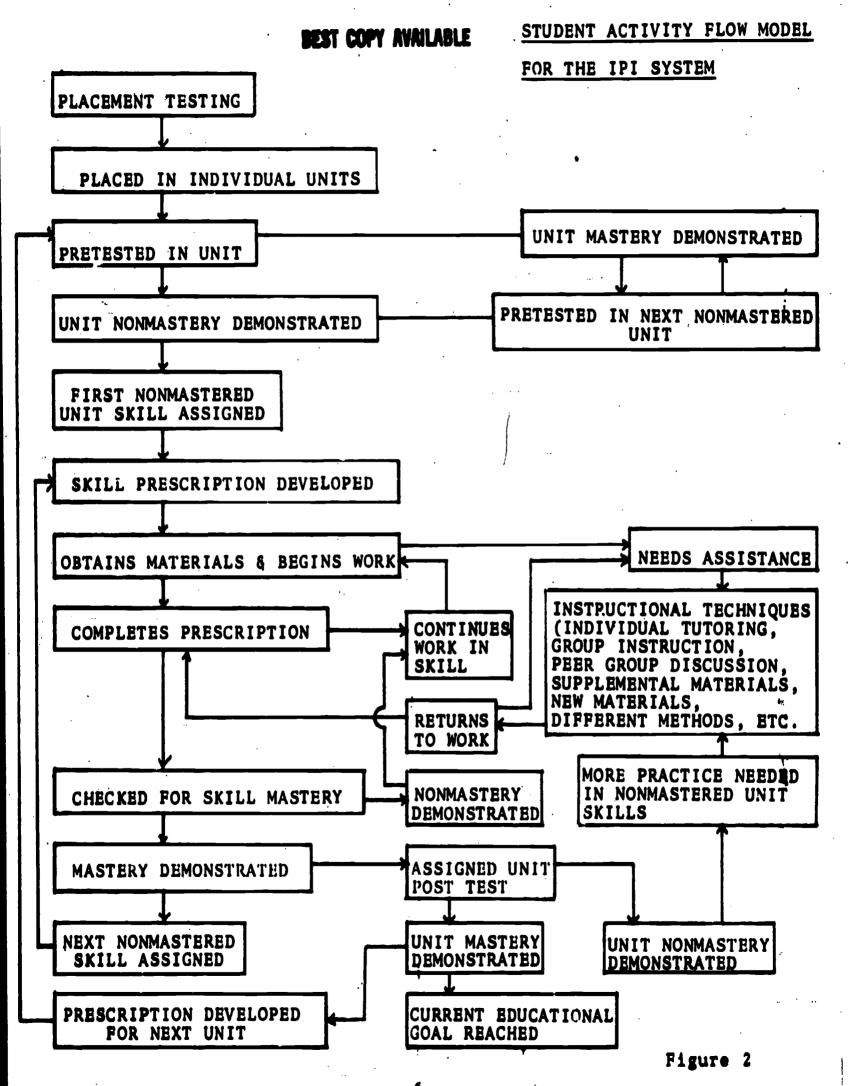
The basic characteristics of the IPI system are:

- 1. A continuum of skills specifically identified by performance objectives.
- 2. A system of criterion referenced tests that provide continuous appraisal of the learner by determining his present competence, monitoring and recording his progress, and checking his mastery.
- 3. A set of sequenced basic instructional materials designed around the precise performance objectives that form the skills continuum.
- 4. A proscription technology that is designed to meet the individual learner's requirement for both the development of concepts and the practice for mastery of skills. In prescribing, an instructor applies the optimum mode of instruction for that particular student.
- 5. Feedback from the system is used to control, more effectively apply, and establish requirements for improvement of the instructional procedure and curriculum materials.

The prescription technology is the unique characteristic of IPI.

It is unique in that it follows up the diagnosis of student needs by prescribing a completely individualized sequence of learning experiences which places the student on the way to his goal by beginning with his lowest level unmastered skill requirement and takes him only through those skills and concepts essential but nonmastered to accomplish his particular goal.

In Figure 2 a student activity flow model illustrates the functional framework for prescribing program materials and instructional settings.



The student is placed in the program units through placement test diagnosis. Specific skill assignments within a unit are determined by unit pretest performance. Individual skill prescriptions depend upon the learning characteristics of the student and the degrees of success or difficulty encountered during his learning experiences. When the student response to prescribed learning settings indicates mastery a skill test is administered to determine mastery. Upon mastery of the last assigned unit skill a unit post test is accomplished by the student to verify mastery of the unit skills. After unit post test mastery is demonstrated the student activity flow model shows the student recycles the system involved with the next nonmastered unit. The cycle will be repeated by the student until his current educational goal in that particular program is achieved.

OPERATIONAL CHARACTERISTICS OF THE PROJECT:

The project administrative organization is illustrated in Figure 3. Shown are the involved federal, state, and county administrative units. Also depicted is the consultative role of Research for Better Schools, a combination private non-profit corporation and regional educational laboratory.

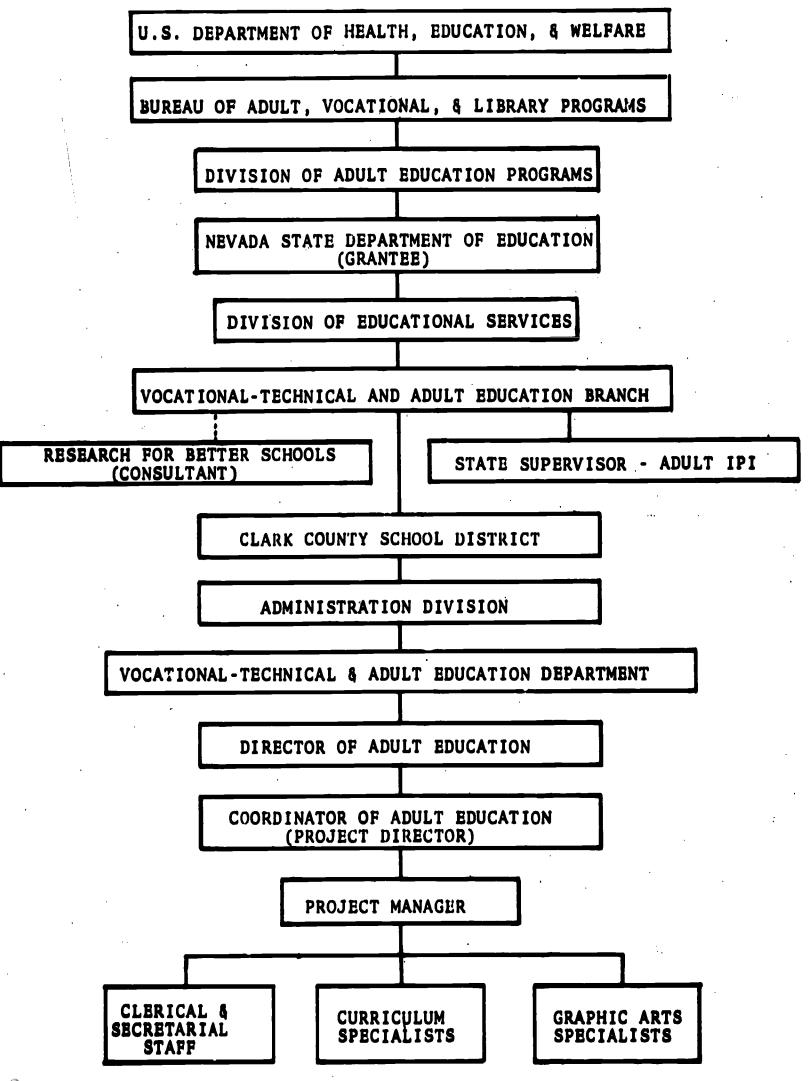
Organization of Project Tasks:

Management procedures for the separate tasks related to the time and effort spent in material development are presented in Figure 4 in the form of a curriculum materials development.cycle.

Staff Positions and Functions:

Involved at the project operational level are the following key personnel: a project director, a project manager, a full-time clerical







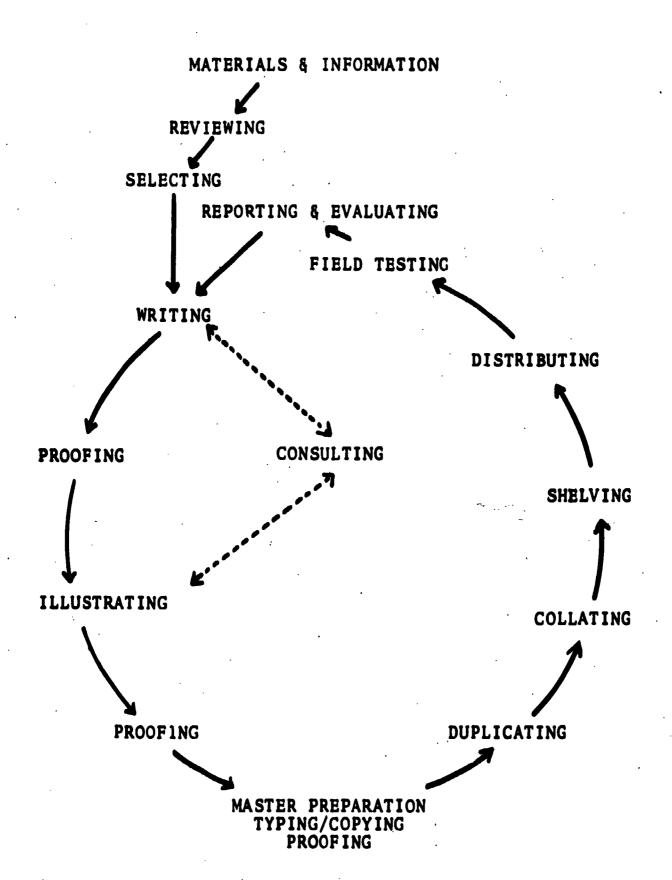


Figure 4

staff of four, two part-time student workers, and three part-time graphic art specialists. The functional relationship of the personnel positions are graphically represented in Figure 5. The operational phase is divided into two separate efforts. One area deals exclusively with the reading curriculum while the other concerns itself with the mathematics curriculum. The reading development initially included two full-time curriculum writers, five part-time teacher writers, and two additional consultants from the local university serving on a part-time basis. Near the end of the project two full-time writers and three part-time writers were engaged in the reading effort.

Mathematics' personnel originally included two mathematics specialists and six part-time teacher writers. The terminal phase mathematics staff was reduced to two full-time writers and two part-time writers.

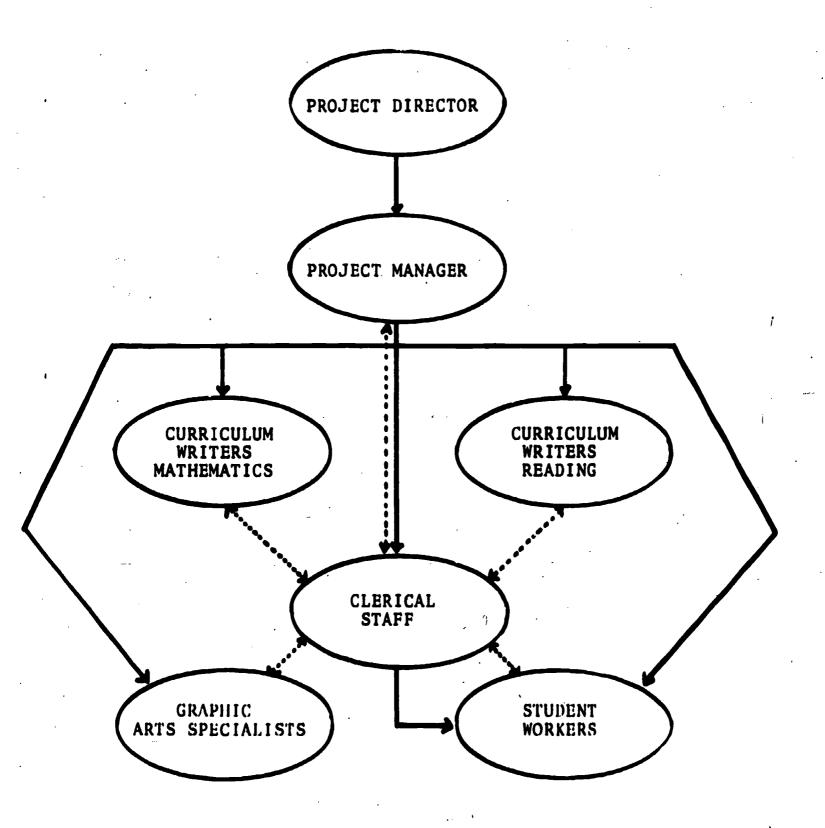
In an attempt to more clearly define the specific tasks as they relate to personnel and material development, the following description may be useful.

Project Director.

Responsible for the supervision of the project as it relates to the Clark County School District. He is responsible for all personnel participating in the project.

Project Manager.

Responsible to the project director for the development, rewriting, and assessment of the curriculum and the IPI system as it relates to adult education. Some of the specific tasks include - the organization for production, administers the affairs of the budget as it pertains to the



Supervisory Flow

---- Materials Development Flow

Figure 5

research and development effort, supervises all personnel who are associated with the project, establishes time lines and production objectives, directs the overall operation of the project. Works closely with school district administration and state supervisors.

Curriculum Writers - full-time

Responsible for the rewriting assessment, development and redevelopment of the IPI curriculum, both reading and mathematics as it relates to adult basic education. Directs the part-time personnel in the reading development. They are responsible for the development of a primary reading program for adult basic education, and the overall development of the mathematics continuum.

Curriculum Writers - part-time

Responsible to the full-time writers and project manager for specific tasks as they are assigned to them.

Graphic Art Specialists.

The three persons functioning in this capacity are responsible to the project manager and the project manager's secretary for all of the graphic art development of the project.

Clerical Staff.

The clerical staff under the immediate direction of the supervising secretary are responsible for typing, reproduction processes, collating, stapling, shelving, coordinating, proofreading and such other related tasks that are assigned to them by the project manager.



Student Workers.

The student workers are responsible primarily to the project manager; however, they perform tasks assigned to them by the supervising secretary.

RESULTS

OPERATIONAL RECORD.

The Individually Prescribed Instruction (IPI) Project to develop reading and mathematics curriculum for adults was undertaken in August, 1969, by the Adult Basic Education Department of Las Vegas, Nevada, in conjunction with Research for Better Schools, Incorporated of Philadelphia, Pennsylvania, the Nevada State Department of Education, and the Clark County School District of Nevada.

The operational record of the project includes several different terms. In an attempt to make the report more easily understood a definition of those terms is included.

- 1. <u>Preproduction</u> refers to those functions that were performed prior to the actual production of materials and includes mainly organizational procedures.
- 2. <u>First-stage revision</u> refers to rather limited material revision in which vocabulary and illustrations were given more adult appeal.
- 3. Second-stage revision includes full-scale changes in material content such as (a) stating objectives clearly on each worksheet, (b) moving the STS (Standard Teaching Sequence) sheets to the front of the mathematics' pamphlets, (c) emphasizing vocabulary relating



either performance or concept oriented, (e) specifying worksheets that have specific instructions for the learner by a standard symbol illustration, (f) de-emphasizing the necessity of specific hardware to accomplish objectives and (g) emphasizing independent study by the learner to a greater extent.

4. On-going revision refers to material changes based on feedback from field testing and continued research. Further revision of this type will strive to make both the mathematics and the reading continuum vocationally oriented.

The original objective of the project was to bring about a first-stage revision of the reading and mathematics materials. This has been accomplished by using vocabulary from a wide selection of resource materials, e.g., trade school curriculum guides in cosmetology, culinary arts, automotive and airplane mechanics, electronics, refrigeration and air conditioning, business and publications issued by local, county, and state agencies on such topics as fire prevention, civil defense, vehicle driving, wildlife protection, conservation, health, police protection, recreational information and other pamphlets and publications relating to living experiences of adults.

Initially the IPI model did not include a primary portion in the reading continuum. Beginning in January, 1970, the reading specialists started to develop a primary reading program, and now that objective has been completely realized.

In order to gain a better understanding of adult education in terms of appropriate materials, instruction techniques, and learner response,



members of this project have visited and observed the following adult basic education programs in various locations throughout the United States. The Utah Technical College, Vocational Improvement Project, The Welfare Rehabilitation Center at Oqurrh School, and Adult Basic Education Center for Mexican Americans - all located in Salt Lake City, Utah. The Laubach Literacy Center in Rockville, Maryland; IPI Pilot Schools in Harrisburg and Quakerstown, Pennsylvania; Adult Basic Education Center in Upper Montclair, Camden, and Newark, New Jersey; Alexandria, Virginia; and New York; Wayne State University at Flint, Michigan; Community School Urban Adult Education Center at Lansing, Michigan; Laubach Literacy Center at Milwaukee, Wisconsin.

DESCRIPTION OF THE CURRICULUM PRODUCT.

Since an evaluation of the curriculum product is reported in a separate publication this section contains the product description.

The curriculum writing was primarily preparation of skill sheets.

These skill pages included such things as information, concept development, and skill practice activities. Skill pages are developed and organized into sets or units that focus upon a stated skill objective. This skill page set is organized into a typical sequence to provide resource, develop understanding, and provide practice or application. A typical sequence model for a set of skill pages is reported in Figure 6. The skill set includes enough pages of material to provide flexibility in prescribing for variations in student requirements like his extent of practice, the amount of review, and the degree of concept development.

TYPICAL SEQUENCE MODEL FOR A SET OF SKILL PAGES

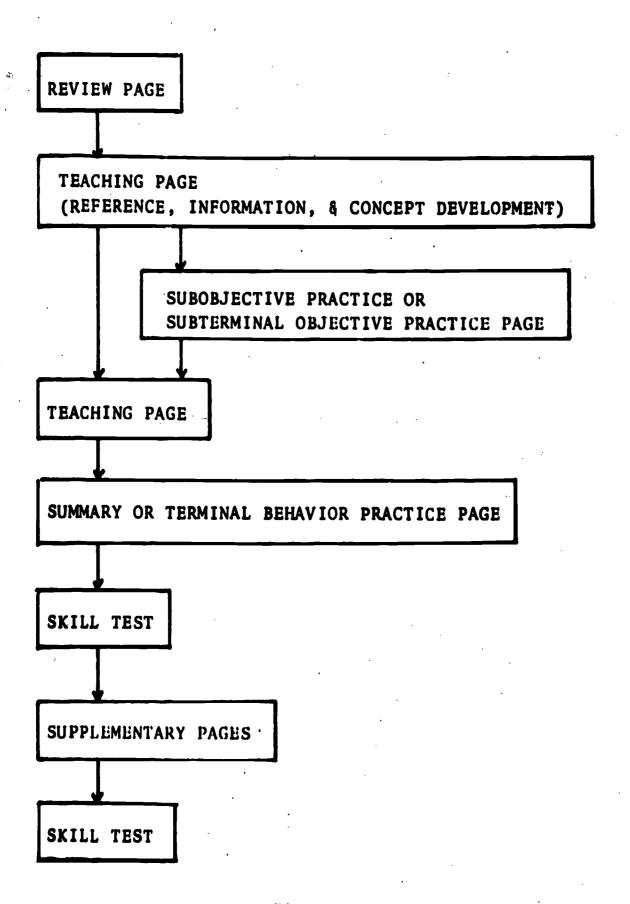


Figure 6



The review page provides a refresher for the previously presented prerequisite performance skills. Teaching pages develop student prerequisite performance skill for the instructional objective.

A subterminal objective practice page develops a part of the instructional objective. The number of teacher pages depends upon the number of performance behaviors developed to insure that the terminal objective is achieved. A summary practice page provides an application of and/or practice for the composite behavior of the teaching pages. The first skill test follows the summary practice page. Supplementary pages provide additional resource like any or all the pages found between the review and the first skill test. These pages are prescribed when a student requires extended teaching and/or practice in one or more parts of the behavior development.

A second or alternate skill test is available for use when the first test has been used by the student and he had not shown skill mastery.

Mathematics

Some typical examples of the mathematics skill sheets may be seen in Appendix A. Appendix A-1 is a Standard Teaching Sequence (STS) sheet for Level E, Combination of Processes, Skill 3. This STS sheet provides the skill objective, identifies the context of each page in the skill sequence, and indicates whether the page developes a concept or provides a performance function. The developmental character of the skill may be determined from the STS page. This particular skill has a large number of options making it particularly desirable for individualization.

Skill page 1 is shown in Appendix A-2. This is an example of a review page.

In Appendix A-3 is a teaching page that develops the concept of "n" as a variable from a typical box symbol. The application of this concept is developed on skill page 5 exhibited in Appendix A-4.

Another teaching page is displayed in Appendix A-5. The concept of how to solve an equation is developed there. Skill page 10 found in Appendix A-6 is the application page for the concept developed on the previous page. Note how the page begins with complete prompts for the learner and proceeds with a regressing number until a problem is presented without prompts.

Appendix A-7 and A-8 presents a summary practice type of page.

The skill test is presented in Appendix A-9. It will be noted that the test consists of two parts. The first part measures objective mastery for E Combination of Processes, Skill 2 and the second part is a brief pretest of the next skill (E Combination of Processes, Skill 3).

In referring to Appendix A-1 it may be noted that the STS lists skill pages 22 through 28 as supplementary sheets to be presented when learner requirements exist.

An example of an illustrated page may be found in Appendix A-10 This example is an A level Numeration skill matching the numeral with a pictured set of items.

The use of leisure time and recreation is depicted in the word problems presented in Appendix A-11. The skill page is from E level, Combination of Processes Unit Skill 7.

Two Skill 2 test pages from H level Combination of Processes are exhibited in Appendix A-12 and A-13 respectively. It will be noted that the items in the test are applications of examples from real life situations. In this case the application is insurance and taxes.

The concluding skill page example found in Appendix A-14 is Level D Money Skill 5. (Application of a combination of consumer practices and job orientation is shown.)

Reading

Skill page examples typical of the reading materials are displayed in Appendix B. Shown in Appendix B-1 is a Standard Teaching Sequence (STS) page for Level B Phonetic Analysis Skill 3. The Skill 3 objective is stated and the context of each page in the skill sequence is reported. Note that two review pages (1T and 2T) are reported. Also reported are teaching pages 4, 8, 12, and 16 that introduce long vowel phonograms with varying initial consonants. Skill pages 6, 10, 14, and 18 are application pages for the previously mentioned teaching pages. It will be noted that additional pages 3, 5, 7, 9, 11, 13, 15, 17, and 19 provide options for prescribing instruction to satisfy varying requirements of individual students. Page 20 is the skill test and page 21 the alternate skill test.

An example of an exercise in identifying words that students know from everyday life experiences is shown in Appendix B-2 and B-3. On

these pages sight word introduction and handwriting beginning with uppercase manuscript is presented through illustrations of signs.

In Appendix B-4 is displayed on A Level Phonetic Analysis Skill 3 page that illustrates the order for printing lower case manuscript alphabet. It shows the sequence of introduction for developing printing skills.

A sample page of recognition of lower case alphabet is found in Appendix B-5.

A Level A Phonetic Analysis Skill 4 page of initial consonant sounds, introduced through the use of picture names, is exhibited in Appendix B-6. Final consonant sounds, introduced through picture names, are presented in A level Phonetic Analysis Skill 5 and displayed in Appendix B-7.

Adult oriented illustration examples are displayed in Appendix B-8, B-9, and B-10. These are Phonetic Analysis skill pages from Level A.

The short and long vowel sound in the medial position are presented in A level Phonetic Analysis Skills pages 6 and 7 respectively and may be seen in Appendix B-11 and B-12 respectively.

In Appendix B-13, B-14, and B-15 are displayed an A Level Vocabulary Development Skill 1 introduction of basic sight words (Dolch List) and an accompanying script for a recording.

The A level Literal Comprehension Skill 1 page shown in Appendix B-16 introduces phrases. Appendix B-17 is an example of a skill from Interpretive Comprehension. Note the adult interest classification



exercise.

Appendix B-18 presents a story using limited vocabulary involving what, how, where, and who questions about the story contents.

From B Level Interpretive Comprehension Skill 2 are two examples of sequence of events skill sheets. One is illustrated and the other uses sentences. The examples are in Appendix B-19 and B-20 respectively.

CONCLUSIONS AND RECOMMENDATIONS

In this type of project, where the development and preparation of learning units is the mission, it is imperative that a system be operating to secure sought after objectives. The quality of the instructional unit components depend upon how well the system is followed.

of major importance in the materials development was the student task analysis. Task analysis included such things as: (a) listing what a learner should be able to do as a result of a learning experience: (b) listing what he should be able to do before beginning the learning experience; (c) determine conditions under which the student does the listed things, and (d) state the means by which the accuracy and completeness of learner response can be measured.

Favorable conclusions are reached about the general learning features of the developed program materials. Characteristic features include:

(a) active learner participation (continuous responding); (b) student response may be confirmed and reinforced as frequently as one skill page during independent student activity and as often as an individual



item during human encounter activity; (c) student self-pacing; (d) pre-structured and pre-prepared materials; (e) tailoring to fit individual learner needs, and (f) instruction scheduled to fit individual student availability.

Several recommendations to improve the humanizing aspect of the IPI

System and program materials follow. Include a student self-evaluation instrument. This self-test for skill mastery would make a student more aware of his progress in skill development in a personally initiated manner. A self-test would encourage the less aggressive learner, a feature very important for the typical adult basic education student.

It would be desirable to provide options for in-depth and quest type learner activity. The in-depth option would provide for learner initiated desires to go beyond the basic unit. This would provide for the student that wants to know more but requires outside structuring for his learning activity. Quest option would provide student initiated study but through learner structured activity.

Staff experience during the project has resulted in the following recommendations:

Reading Suggestions:

- 1. Revise the vocabulary for the beginning units by using only words linguistically regular. Long vowels are to be introduced at more advanced levels.
- 2. Systematically continue use of the words introduced in preceding levels along with the new vocabulary for the level.



-22-

- 3. Expand the language arts approach by including more handwriting within each skill.
- 4. Introduce more adult oriented stories.
- 5. Introduce more meaningful sight words at the lower levels.
- 6. Develop several concise objectives to replace those that now have many performance behaviors incorporated in a single objective.
- 7. Produce an IPI keyed supplementary material resource system for use with adults.

Mathematics Suggestions:

- 1. Develop Special Topics more meaningful to adults. These will probably take a more vocational and family living approach.
- 2. Prepare a system for assisting the instructor in prescribing minimum essential mathematics skills for students with specific job objectives.
- 3. Supplement the produced skills with audio-visual materials like the single concept film loop for such units as fractions, decimals, problem solving, geometry and systems of measurement.
- 4. Include the present money and time areas into the Systems of Measurement area.
- 5. Combine the operation skill areas of (1) Addition and Subtraction and (2) Multiplication and Division.



- 6. Combine the areas of (1) Numeration and Place Value and (2) Combination of Processes and Special Topics as a Problem Solving and Application area.
- 7. Develop some criteria for readability in the various levels of mathematics skill directions, explanations, and word problems to assist the instructor in prescribing skill pages to students with low reading ability.
- 8. Include in suggestion 6 or develop an area on Problem Solving Procedures.



IPI MATHEMATICS

LEVEL E, COMBINATION OF PROCESSES (07) SKILL 3

OBJECTIVE: Solves equations which use a letter (e.g., "n") as a variable, for all skills to this point.

STANDARD TEACHING SEQUENCE

Page	Supplement	ment. erla
#1.	Fills in missing numerals in addition, subtraction,	JL 49.
AT .	multiplication, and division equations.	
* #2.	Fills in missing numerals for addition, subtraction,	•
- 40 .	multiplication, and division equations.	
43	Fills in missing numerals in more difficult equations.	
#3. *4.	Tells what numeral "n" equals in division equation	
	after introduction to the letter variable.	
#5 .	Circles correct letter variable equation from multiple	
73.	choice to match equation with blank.	
#6.	Circles equations to relate unknown with letters and	
70.	blanks.	
±47	Finds sums or differences with a letter variable.	
~ W / •	Inititial prompts.	
#8.		
¥0.	prompts.	22
*49.	Finds unknowns after equations are explained. Addition	
~ 47 .	and subtraction.	23
#10 .	Solves equations for unknowns. Addition and subtraction.	
11 .	Solves equations for unknowns. Addition and subtraction.	
#12 .	Finds missing numeral (addend) in addition without inter-	
*	mediate step.	24
#13 .	Finds missing numeral (subtrahend) in subtraction without	
#13	intermediate step.	
#14.	Finds missing numeral(minuend) in subtraction equation	
***	without intermediate step.	25
#15 .	Finds unknown in multiplication with intermediate step	
*23.	after explanation.	26
#16.	Finds missing product or quotient with letter variable.	
#17.	Finds missing divisor in division equation.	27
18.	Finds missing dividend in division equation.	28
#19 .	Finds missing numerals in addition and subtraction	
	equations.	
#20.		
,- 	equations.	•
21.		
,	CET II.	29
		-

- * Pages that lead to an understanding of a concept.
- # Pages that lead to the performance of the objective.

LEVEL E, COMBINATION OF PROCESSES (07) SKILL 3



Write in the missing numerals.

$$-99 = 1$$

TOTAL	NUMBER
POINTS	CORRECT
10	

LV 4/70

APPENDIX	A-2 34
----------	-----------

LEVEL	UNIT	SKILL	PAGE
E	07	3.	1

Solve these problems.

$$\underline{\mathcal{G}} - 6 = 3$$

$$+ 9 = 18$$

You have solved problems like this before. The ____ stands for the numeral. you do not know. You use different methods of finding the answer, depending upon the problem. You add, subtract, multiply, or divide to find the missing numeral. Whatever you decide you must do to find the answer, you use the numerals that are given in the problem to help you find the numeral you don't know.

Write in the missing numerals.

$$9 + = 17$$

TOTAL	NUMBER CORRECT
8	-



FEAST	UNIT	SKILL	PAGE
E	07	3	2

12' - ? = 3

Instead of using a
$$\square$$
 or ? to stand for a numeral, you sometimes use a letter. Thus, instead of $12 \div \square = 3$, you would have $12 \div n = 3$.

You often use "n" to stand for the numeral you want to find, but any letter can be used. Whichever letter you use, it represents the missing numeral.

$$12 + n = 3'$$

What numeral does "n" stand for?

TOTAL NUMBER POINTS CORRECT LV 4/70

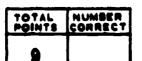
36

APPENDIX A-3

LEVEL	UNIT	SKILL	PAGE
E	07	3	4

Write in the missing numerals.

$$-20 = 40$$





LEVEL	UNIT	SKILL	PAGE
E	07	3	3

Encircle the correct equation.

$$6 \times \underline{\hspace{1cm}} = 18 \text{ is the same as} \begin{array}{c} n \times 3 = 18 \\ 6 \times n = 18 \end{array}$$

$$n + 6 = 5$$

$$+6 = 5$$
 is the same as 30 + n = 5

$$30 + 6 = n$$

$$n + 23 = 40$$

$$17 + 23 = ___$$
 is the same as $17 + 23 = n$

$$17 + n = 40$$

$$n-99=2$$

$$101 - n = 2$$

TOTAL NUMBER POINTS CORRECT

LV 4/70

APPENDIX A-4

FEAST	UNIT	SKILL	PAGE
E	07	3	5

Encircle the correct equation.

$$+ 8 = 13$$

$$5 + n = 13$$
 is the same as

$$12 + 4 = n$$
 is the same as

$$n \times 10 = 300$$
 is the same as



LV 4/70

LEVEL UNIT		SKILL PAGE		
E	07	3	6	

Study the following equations.

n + 9 = 19 This equation ask, "What numeral (n) added to 9 is equal to 18?

Do you know what you need to do to find "n"? Yes, you must

subtract, because subtracting 9 is the inverse of adding 9. (Subtracting 9 "Andoes" what adding 9 did.)

n = 18 - 9 This shows your work. Be sure to put in this step.

 $n = \frac{1}{2}$ This is how you write your answer, showing what the letter stands for.

n = 9 means that 9 is the numeral that you add to 9 to equal 18. 9 replaces "n" in the original equation.

Here is another equation.

7 + x = 14 ___You want to know what numeral "x" represents.

 $x = 14 - 7 \leftarrow$ Your work.

 $x = \leftarrow$ Your answer.

Check: 7 + ___ = 14

Now try these equations.

$$27 + w = 41$$

 $w = 41 - 27$

Check: - 8 = 5

TOTAL POINTS	NUMBER
7	

LV 4/70

APPENDIX A-5

- LEVEL	UNIT	SKILL	PAGE
E	07	3	9

Solve these equations to find the numerals represented by the letters. Follow the same steps you have been using.

Check your answers.

$$5 + x = 15$$

$$x = 15 - 5$$

$$x = /0$$

Check:
$$5 + /(3) = 15$$

$$y + 9 = 17$$

$$m-6=15$$

Check:

$$7 + q = 27$$

7 =

Check:

$$n - 9 = 6$$

$$m-8=1$$

Check:

m =

Check:

TOTAL	NUMBER CORRECT
17	

PAGE

Solve these equations. Notice that the order in the equation is sometimes different. You still solve the equation in the same way.

$$n-23=14$$

$$63 = n - 36$$

$$n = 14 + 23$$

$$n = 63 + 36$$

$$n = 3.7$$

$$40 = 120 - n$$

$$250 = m - 100$$

$$n = 120 - 40$$

$$39 = n - 39$$

$$125 = 231 - n$$

$$n = 231 - 125$$

$$171 = 237 - n$$

$$290 = n - 70$$

n e

n =

. ...

n =

TOTAL	NUMBER
POINTS	CORRECT
12	

LV 4/70

APPENDIX A-7

LEVEL	UNIT	SKILL	PAGÉ
E	07	3	19

Solve these equations. The order is sometimes different, but you solve them the same way.

$$12 + 3 = n$$

$$n = 4$$

$$7 \times n = 63$$

$$n = 63 + 7$$

$$444 = n + 2$$



ERIC

Full Text Provided by ERIC

LV 4/70

43

APPENDIX A-8

FEAST	UNIT	SKILL	PACE
E	07	3	20

CET I

4 100 \$
NO. OF PTS. %
3 75

Find the value of "n" in each of these equations.

$$6 + n = 18$$

 $36 = 6 \times m$

____ = N

$$186 = 148 + m$$

156 = 140 + n

m =

= 1

Multiply or divide.

Write \angle , =, or > in the circle to make the statement true.

TL. PTS.		
6 100%		
NO. OF	%	
	93	
4	- 77	
	D	
	-11	
_	77	

8 days + 3 days

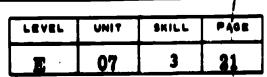


42¢ + 7¢

30¢ + 12¢

LV 4/70

APPENDIX A-9



Solve these equations. Find the sum or difference.

$$433 + 249 = x$$

$$360 - 149 = m$$

$$m = 2/1$$

$$717 - 439 = n$$

$$124 + 457 = a$$

$$654 - 237 = y$$

$$874 + 59 + 36 = k$$

$$779 + 222 = w$$

$$987 - 573 = d$$

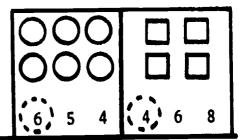
$$428 + 219 = n$$

$$693 - 216 = r$$

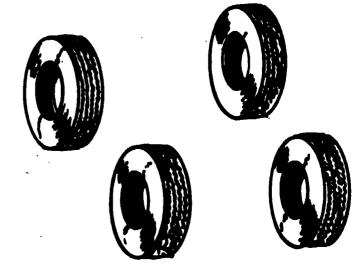
$$874 + 109 = p$$

Encircle the numeral.

BEST COPY AVAILABLE

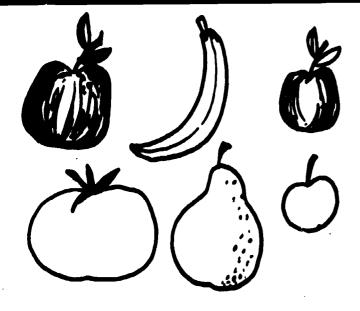


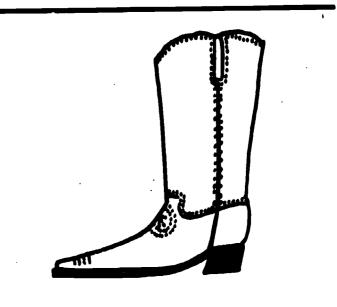












7 6 8

1 2 3

LV 3/70

46

٨

01

6

Solve these problems. Write the equations for each and find the missing variable (n).

Martha helped to plan a camping trip. Her family spent \$56 for a tent, \$15 for each of 4 sleeping bags, \$23 for a food pack, and \$14 for a cooking kit. How much did Martha's family spend for camping supplies?

Remember to read the problem carefully and decide which operations must be used. In this problem it will be multiplying and adding.

Next, set up an equation.

$$56 + (4 \times 15) + 23 + 14 = n$$

Perform the multiplication and then substitute the answer for (4×15) .

The equation now looks like this. _____ = n Work Space

Next, perform the other operation. Add.

You now have n. n = 153

In Michigan, Neal caught 27 blue pike and 20 perch. His brother caught 13 blue pike and 40 perch. How many fish did they catch? How many more perch than blue pike were caught?

Work space

After reading the problem carefully, note that you must not only know how many fish they caught altogether (addition), but also how many more perch (20 + 40) were caught than blue pike [-(27 + 13)].

	=	

They caught ____ fish altogether.

They caught ____ more perch than blue pike.

TOTAL	NUMBER
7	

LV/4/70

LEVEL	UNIT	SKILL	PAGE
E	07	7	12

Solve these problems for the variable (n).

Write an equation for each and fill in the answer blank with the value of "n."

Jack weighs 80 pounds. He weighed 59 pounds last year. How many pounds did he gain?

Remember to read the problem carefully and decide which operation you must perform to solve the problem. For this problem you will be using subtraction.

Set up the equation.

Work space

$$80 - 59 = n$$

$$n = 2 /$$

Jack gained ____ pounds.

Nancy and Carole each weigh 70 pounds. Mary weighs 65 pounds. How much do all the girls weigh?

Work space

$$\frac{70}{} + \underline{ } + \underline{ } = \mathbf{n}$$

n = ____

The girls weigh ____ pounds altogether.

Howard paid 90¢ for 2 pounds of candy. How much does one pound of candy cost?

Work space

n = ___

One pound of candy costs ____¢.

TOTAL	NUMBER
POINTS	CORRECT
3	

E 07 7 11

CET I

TL. PTS.			
•	100%		
NO. OF	•		
7	88		
6	75		
5	63		
4	50		
	25		
	T		

Annual Premium For a \$1,000 Policy					
Age nearest birthday	10-year term	Straight life	20-payment life	20-year Endowment	
20	\$ 7.00	\$ 16.40	\$ 29.80	\$ 47.55	
25	7.75	18.75	32.60	48.20	
30	8.85	21.70	35.75	49.00	
35	10.55	25.40	39.50	50.40	
40	13.20	30.00	43.85	52.40	
45	17.00	36.00	49.00	55.45	

Using the above Premium Table, find the annual premium for each of the following insurance policies.

	Face value	Age	Kind of policy	Annual premium
1.	\$ 7,500	25	Straight life	
2.	\$16,000	. 40	10-year term	
3.	\$ 4,000	30	20-year endowment	
4.	\$ 3,600	35	20-payment life	

- 5. Mr. Little bought a 20-year endowment policy for \$5,000 when he was 20 years old. How much will he have to pay during the 20 years of his premiums?
- 6. Mr. Big bought a \$15,000 straight life policy when he was 25 years old. How much will his premiums be by the time he is 55 years old?

I.V12/69

Level	Unit	Skill	Page
H	07	2	6

		life i	nsurance pays yo
the face value of	f the policy at	the end.of	20 years.
		life i	nsurance has no
value.		. •	
A county assesso	or reports the v	valuation of	the county is
\$200,000,000.	he service orga	inizations e	stimate their
			0 000 1111-4 15
expenses for the	coming year w	111 be 5,00	U,000. What Wi.
the tax rate be			
	in mills per do	11ar?	<u> </u>
the tax rate be	in mills per do	ollar?	
the tax rate be In dollars per	in mills per do	ollar?	
the tax rate be In dollars per	in mills per do	ollar?	
the tax rate be In dollars per \$ In assessed va	in mills per do	ollar?	
the tax rate be In dollars per \$ In assessed va	in mills per do	ollar?	
the tax rate be In dollars per \$ In assessed va	in mills per do	ollar?	
the tax rate be In dollars per \$ In assessed va	in mills per do	ollar?	

LV12/69

Level	Unit	Ski11	Page
11	07	2	7



Fi11	in	the	hlan	ke	below.
LTTT	T 11	CINC	Oran	V D	DETOM.

If you sold a dozen eggs to Richard for 69¢, and he gave you 75¢ to pay for the eggs, you would have to give him change.

When you count out the coins you say, "69¢, "____", (as you give him a penny) "____", (as you give him a nickel.)

You have reached _____ ¢ and do not owe Richard any more money.

If you sold a book to Emily for 77¢, and she gave you \$1.00 to pay for it, you would have to give her change.

When you count out the coins you will say "77¢", ____,

You have reached ____ and do not owe Emily any more money.

What coins have you given Emily.

3 ____ and ___ dimes



LEVEL	UNIT	SKILL	PAGE
D	09	5	7

Teachers Guide to Objective B-PA-3

OBJECTIVE: Identify and write words by substitution of initial consonants to phonograms with long vowels and final

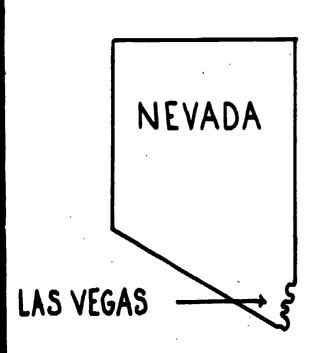
STANDARD TEACHING SEQUENCE

Page	Addititional	pag
1T 2T	Review of similiar words with short and long vowels.	3
4	Identify and write words by substitution of initial consonants to phonograms ame, ate, ake, age, ave, ale.	5
6	Identify and write words in sentences	7
8	Identify and write words by substitution of initial consonants to phonograms, ice, ide, ile, ine, ive, ole.	9
10	Identify and write words in sentences	11
12	Identify and write words in substitution to phonograms ace, ape, ase, ife, ime, ipe.	13
14	Identify and write words in sentences	15
16	Identify and write words by substitution of initial consonants to phonograms ote, ope, ose, ode, uhe, ule, une, ome, ize, obe.	17
18	Identify and write words in sentences	19
20	CET	
21	Alt. CET	
	Natarials not included in this folder:	

B-PA3- 1T

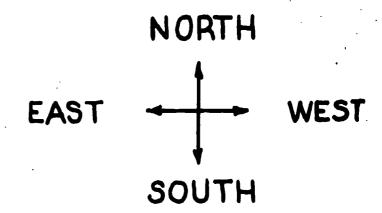


My name is			
		Date	
	ntroduction to words that		
Note for the signs. All 1	instructor: Ask the stude etters of the alphabet are	ent to identify the e used in these sig	following ns.
STOP	FIRE		PEED IMIT 25
	ONE WAY		
YIELD	HELP WANTED	[Q EXIT]	UIET
VOTE HERE	NO JAYWALKING		BUS
Z00	>		·A -DA - 2 IT





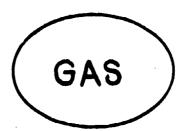
<ADULT EDUCATION>





POISON

BANK



MEN AT WORK





My name is

.

OBJECTIVE: Identify and write the lower case manuscript alphabet.

- *a b c d e f g h i j k l m
- *nopqrstuvwxyz
- Write the letters that have just straight lines.
- 2. Write the letters that have slanting lines.
- 3. Write the letters that have straight lines and curves.

- 4. Write the letters that have only curves.
- 5. Copy all the small letters here.

My	name	is	

50

_____ Date _____

OBJECTIVE: Identify lower case manuscript letters.

Note to the instructor: Have student circle the letters that are alike. See sample.

а	Ъ	(a)	d	(a)	n	m	n	m	n
b	С	b	d	Ъ	0	a	0	0	С
С	a	b	С	С	2	q	р	q	p
d .	d	mare and	, b	d	q	p	q	p	q
е	е	е	f	f	r	b	r	S	r
f	е	е	f	f	S	r	t	S,	S
(to	f	D)	е	g	t	t	S	t	r
h	. h	a.	h	h	u	٧	·-·u	у	u
i	j	i	h	i	V	W	V	V	u
j	i	j	j	i	w	X	w	W	V
k	i	k	h	k	x	у	X	X	ÿ
1	i	1	1	j	у	j	у	þ	у
m	n	m	0	m	Z	у	Z	S	Z

LV-1-70

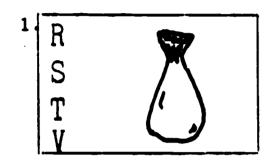
Λ-1'A-3

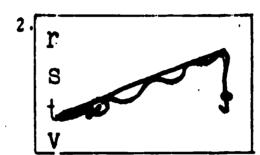
12

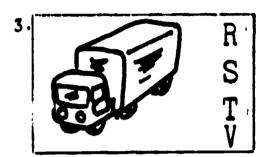
Date

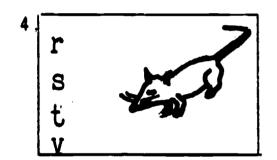
OBJECTIVE: Identify initial consonant sounds of R, S, T, and V (r, s, t, and v).

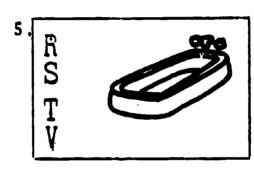
Directions: Circle the letter that gives the beginning sound in the name of each picture. The letters are both upper and lower case.

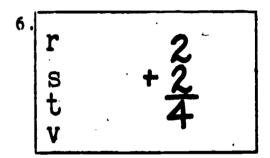


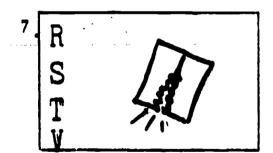


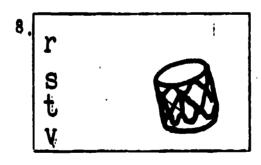


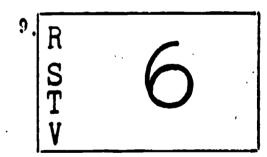


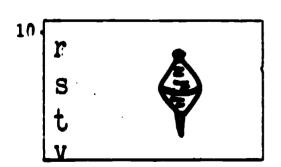


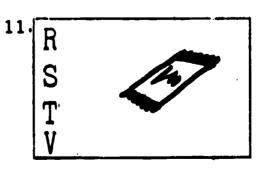


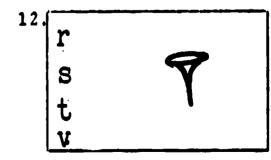












LV-1 70

A-PA-4

14 T

BEST COPY AVAILABLE

My name is			1.2
		Date .	
OBJECTIVE:	Identify final conson in picture words.	ant sounds of N ,	P, R, and S
Directions:	Circle the consonant each of these picture	letter you hear as	
	2.	3.	4.
	n p r s	N P	n p r
	6.	7.	8.
	p r s	N R R S	n p r s
	10.	11.	12.
N R R	n p r s	N P R S	n p r s



ERIC Full Text Provided by ERIC

5.

9.

58

A-PA-5 10

-			
Da + a			

OBJECTIVE: Identify initial consonant sounds of B, C, D, and F.

Directions: Look at the picture below. Many of the things pictured have names that start with the beginning consonant sounds of B, C, D, or F. See how many of these objects you can find and



Date

Identify initial consona - words of L, M, N, and P. OBJECTIVE:

<u>Directions</u>: The picture below shows many things whose names begin with the sound of L, M, N, or P. Find these objects and label them with the correct letter.



ERIC

D	a	te	

OBJECTIVE: Identify initial consonant sounds of R, S, T, and V.

<u>Directions</u>: The picture has many objects whose names begin with the sounds of beginning letters r, s, t, and v. Label each picture with the correct letter. You may use upper or lower case letters.



LV-1-70

A-PA -4

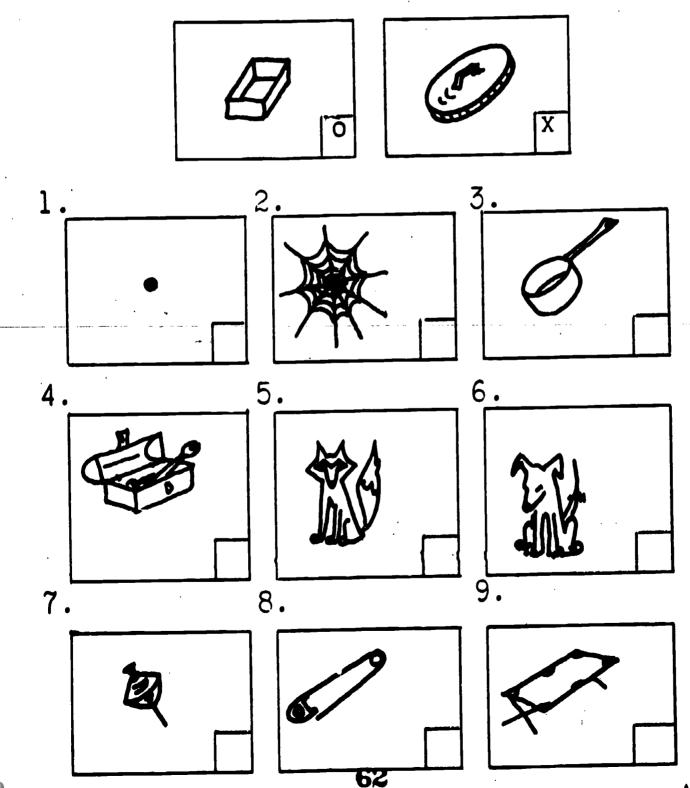
_		
:	"	:
•	\sim 1	,
:	<i>(I</i>)	ı
•	~ ? I	
٠	/ 1	
	, ,	
L-		

My	name	is
----	------	----

Date _____

OBJECTIVE: Identify and write the short vowel sound of the letter of in the middle position of picture words.

Directions: Write an o in the corner box if the picture name has the short o vowel sound. Put an in the box if the word does not have the short o vowel sound. The first two pictures are done for you.



Му	name	is		
_				

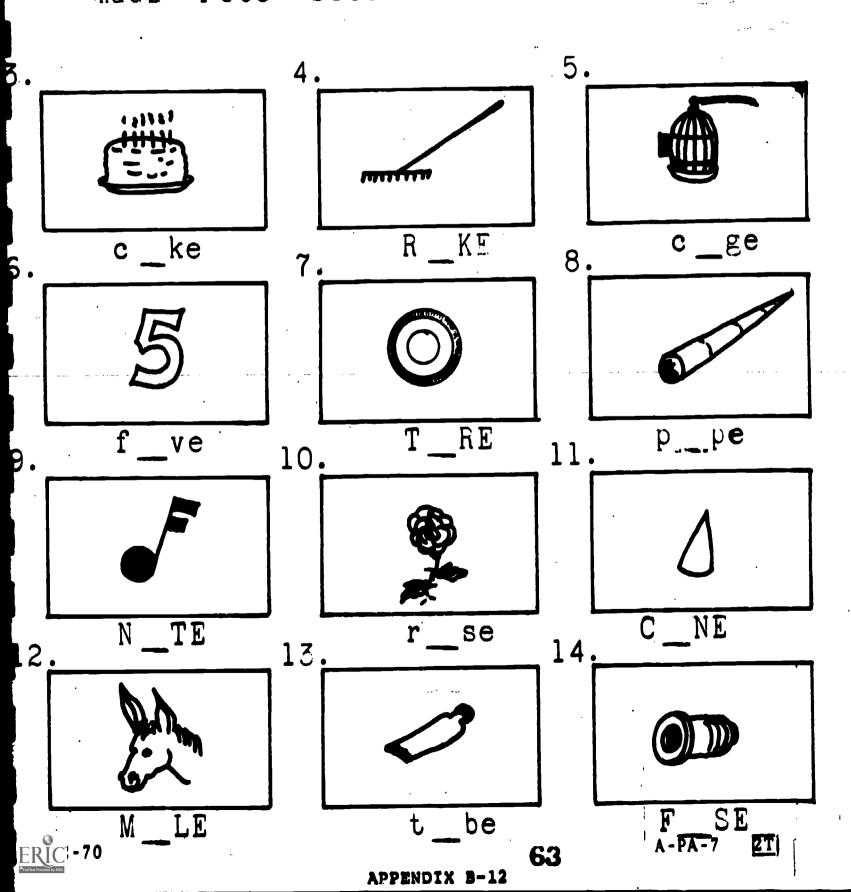
	i i
11/1	1 1
	1 1
	1 1
	

Date

Identify and write the vowel letters and their long sounds in words. **OBJECTIVE:**

Directions: Follow directions on A-PA-7 2T beg big bog buy bag

made Fete bite note cute



ERICV-1-70

me

APPENDIX B-13

us

we

continued

of'

My name	is	 	
My, name	15	 	_

Continued from page 17T

10. on to under up and but

11. as away down east here no

north 12. not south well west where rude

13. yes an all black cute dim tame

fat four funny good hot little ten

live mole nice new odd quiet three Script for A-VD-1 17T page 1

Narrator: Stress all underlined words. Read answer numerals slowly.

On these skill sheets, 16T & 17T, there are 15 more boxes of basic sight words that are very important for you to learn. The directions are the same, as the words are pronounced you will write a numeral on each space. Some of the boxes have seven words. Ready (pause)

Box 1 - write 1 by <u>I</u> (pause), 2 by <u>kiss</u> (pause), 3 by <u>is</u> (pause), 4 by <u>led</u> (pause), 5 by <u>hop</u> (pause), and 6 by <u>hug</u> (pause). Your numerals should read in order from the top - 5, 6, 1, 3, 2, and 4. (4 second pause)

Box 2 - Write 1 by met (pause), 2 by let (pause), 3 by made (pause),

4 by pet (pause), 5 by look (pause), and 6 by pack (pause).

Box 3 - Write 1 by rob (pause), 2 by pop (pause), 3 by ran (pause),

4 by quack (pause), 5 by rip (pause), and 6 by pile (pause).

Box 4 - Write 1 by <u>rub</u> (pause), 2 by <u>rode</u> (pause), 3 by <u>set</u> (pause),

4 by said (pause), 5 by rot (pause), and 6 by see (pause).

Box 5 - Write 1 by sob (pause), 2 by tame (pause), 3 by tug (pause),

4 by sock (pause), 5 by vote (pause), 6 by sit (pause).

Box 6 - Write 1 by wed (pause), 2 by wash (pause), 3 by win (pause),

4 by wanted (pause), 5 by wait (pause), 6 by will (pause).

Box 7 - Write 1 by work (pause), 2 by he (pause), 3 by wink (pause),

4 by me (pause), 5 by it (pause), and 6 by zip (pause).

Box 8 Write 1 by she (pause), 2 by mine (pause), 3 by we (pause),

4 by \underline{I} (pause), 5 by \underline{my} (pause), 6 by \underline{us} (pause).

Box 9 - Write 1 by for (pause), 2 by you (pause), 3 by in (pause),

4 by as (pause), 5 by of (pause), 6 by at (pause).



Date

OBJECTIVE: Identify phrases describing picture clues.

Directions: Underline the phrase to match each picture.



on the box in the box under the box



in the jar under the jar on the jar



under the hut in the hut on the hut



under the cage on the cage in the cage



down the water up the water under the water



under my hand in my hand up my hand



under the sink on the sink in the sink

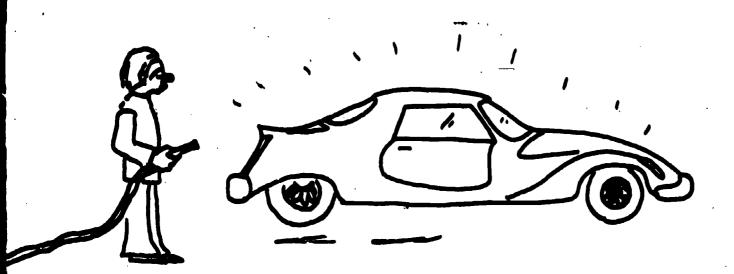


up the map in the map on the map

LV-1-70

OBJECTIVE: Identify and write answers to recall questions.

<u>Directions</u>: Read the short story and questions. Underline the answers found in the story and write them in cursive on the spaces provided.



MY CAR

I have a blue car.

It runs well on four good tires.

I fix the car in my yard.

I wash the car and it looks good.

1. What do I have?

2. How will the car run?

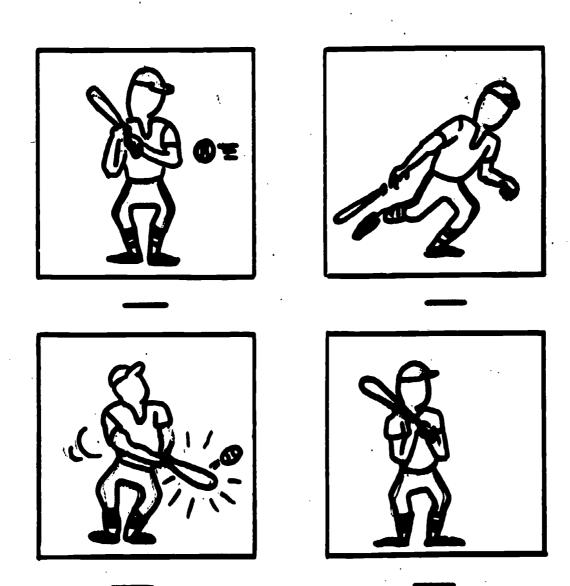
3. Where do I fix the car? _____

4. Who will wash the car?

Name	Date	
1101110		

OBJECTIVE: Number pictures of an event in sequencial order.

<u>Directions</u>: Number the following pictures in the order they might happen.



Name	Date						
OBJEC7 IVE:	Number sentences in sequencial order.						
Directions:	Number the following sentences in the order that they happen. The first one is done for you.						
	The men will mop the deck. It has four blue and white sails. That pretty ship will sail on the lake. They want it neat and clean.						
2.	"Open it now." "Thank you." "It is so pretty," said Jane. "This gift is for you, Jane," said Tom.						
3.	A man is up on the pole. Look at that big ship. He is waving a flag. I hope he won't fall.						
4.	She is a good worker. She likes her work. She sells hot dogs and cakes. Jane is a carhop.						